

SOME NEMATODE PROBLEMS OF SPEARMINT IN FLORIDA.

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Spearmint, Mentha spicata L., is a popular garden herb in Florida. Commercial production is quite limited in the state, but there is a potential for considerable expansion of winter and early spring plantings. This crop is propagated vegetatively and maintained in production beds for a number of years allowing nematode pests to build up to injurious levels. There have been several reports of nematode association or injury to Mentha spp. in various areas of the United States. Foliar (Aphelenchoides sp.), lesion (Pratylenchus penetrans (Cobb) Filipjev & Schuur. Stek.), needle (Longidorus silphus Thorne), pin (Paratylenchus macrophallus Goodey), and root-knot (Meloidogyne hapla Chitwood) nematodes are the most common species causing injury to spearmint plantings in this country (1,2,3,4).

In Florida four species have been found associated with spearmint damage under field conditions. They are: awl (Dolichodorus heterocephalus Cobb), lesion (Pratylenchus scribneri Steiner), sting (Belonolaimus longicaudatus Rau) and stubby-root (Paratrichodorus christiei (Allen) Siddiqi) nematodes (6).

SYMPTOMS. In some Florida soils, such as in Myakka fine sands near Oviedo, awl, lesion, sting, and stubby-root nematodes occur together in spearmint field plantings. In mint beds infected plants exhibit very uneven and stunted growth, along with chlorotic leaves that often are reddish-brown in color, and poorly developed root systems (6).

NEMATODE DAMAGE. Awl, sting, and stubby-root nematodes are ectoparasitic migratory species that reproduce in the soil and feed externally on spearmint root tips, destroying apical meristems and preventing root elongation. Mint roots attacked by awl and sting nematodes are short and stubby with shrunken lesions along the axis and tips. Lesion nematodes are migratory endoparasitic species which invade the spearmint root causing large cavities in the cortical tissues that result in brown lesions on the root surface.

In greenhouse tests population densities of awl, sting, and lesion nematodes increased rapidly on spearmint seedlings, whereas those of stubby-root nematodes did not vary. These findings suggest that spearmint is a good host for the three former species, but not for the stubby-root nematodes. Seven months after inoculation awl, sting, and lesion nematodes each caused seedling top weight suppression of 30, 46, and 52% respectively, compared with the noninoculated control (6). During these tests P. scribneri-infected plants became chlorotic, stunted, and poorly developed (Fig. 1).

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Roots exhibited the typical brown lesions and decay (Fig. 2) with high plant mortality rate.

CONTROL. Information on control of nematodes attacking Mentha spp. is limited; however, it is advisable to start plantings in beds free of nematodes. Studies (5,7) have shown that several nonvolatile nematicides are effective for lowering nematode populations and increasing yield.

SURVEY AND DETECTION: If symptoms similar to those described are noticed in mint plantings, soil and root samples should be taken and submitted to the Bureau of Nematology for examination.

LITERATURE CITED:

1. Bergeson, G. B. 1963. Influence of Pratylenchus penetrans alone and in combination with Verticillium albo-atrum on growth of spearmint. Phytopathology 53:1164-1166.
2. _____, and R. J. Green, Jr. 1979. Damage to cultivars of peppermint, Mentha piperita, by the lesion nematode, Pratylenchus penetrans in Indiana. Plant Dis. Repr. 63:91-94.
3. Horner, C. E., and H. J. Jensen. 1954. Nematodes associated with mint in Oregon. Plant Dis. Repr. 38:39-41.
4. Jensen, H. J., and C. E. Horner. 1956. A decline of peppermint caused by an ectoparasitic nematode, Longidorus sylphus. Phytopathology 46:637.
5. Pinkerton, J. N., and J. H. Jensen. 1983. Chemical control of Longidorus elongatus on peppermint with nonvolatile nematicides. Plant Disease 67:201-203.
6. Rhoades, H. L. 1983. Effect of Belonolaimus longicaudatus, Dolichodorus heterocephalus, and Pratylenchus scribneri on growth of spearmint, Mentha spicata, in Florida. Nematropica 13:145-151.
7. _____. 1984. Control of Pratylenchus scribneri on spearmint, Mentha spicata, with nonfumigant nematicides. Nematropica 14:85-89.

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